Serial No.: 10/003,290
Atty. Docket No.: P67379US0

Caley

IN THE CLAIMS:

Please amend, retain and cancel the claims as set forth herein:

1. (Currently Amended) A method for converting wavelength of a signal beam combined to a pump beam, the method comprising of the steps of:

providing a channel type polymeric waveguide including a nonlinear polymer ~~having a parallelogram-shaped metal plate electrode between a polymeric bottom cladding and a polymeric top cladding~~ in the middle of the waveguide;

poling the nonlinear polymer along a predetermined direction by applying a voltage in a range about 120 V/μm to 130 V/μm to the polymeric wavegiude; and

making the signal beam combined to the pump beam pass through the polymer waveguide in which the nonlinear polymer is in a poled state.

2. (Original) The method as recited in claim 1, further comprising the steps of:

making the pump beam pass through a polymeric mode converter before the signal beam is combined to the pump beam; and

combining the signal beam and the pump beam at a direction combining means after the pump beam passes through the polymeric mode converter.

3. (Previously Presented) The method as recited in claim 1, wherein, during the polymer poling step, the voltage is applied in a direction perpendicular to the direction in which the signal beam passes through the polymer waveguide.

4. (Currently Amended) A wavelength converter for converting wavelength of a signal beam combined to a pump beam, comprising:

a mode converting region for converting a mode of the pump beam;

a direction combining region for combining the signal beam to the pump beam; and

a wavelength converting region for converting the wavelength of the signal beam combined to the pump beam,

wherein the mode converting region and the wavelength converting region are formed as integrated by nonlinear polymeric material ~~having a parallelogram-shaped metal plate electrode between a polymeric bottom cladding and a polymeric top cladding~~ to construct a polymeric waveguide extended along a propagation direction, and a nonlinear polymer in the wavelength converting region is manufactured by including voltage applying means for applying a voltage in a range about 120 V/μm to 130 V/μm to the polymeric waveguide in order to pole the nonlinear polymer in the wavelength converting region to a predetermined direction.

5. (Previously Presented) The wavelength converter as recited in claim 4, wherein the polymeric waveguide is formed to show a channel type shape having a rectangular cross-section,

the polymeric waveguide is wrapped by a cladding from the mode converting region to the wavelength converting region, and

a side surface of the mode converting region is exposed at an input side and a side surface of the wavelength converting region is exposed at an output side.

6. (Previously Presented) The wavelength converter as recited in claim 5, wherein the mode converting region is formed such that an area of the channel type shape from the exposed side to the boundary with the wavelength converting region varies gradually.

7. ((Previously Presented) The wavelength converter as recited in claim 5, wherein the mode converting region is formed such that an area of the channel type shape from the exposed side to the boundary with the wavelength converting region is fixed and the mode of the pump beam does not vary.

8. (Previously Presented) The wavelength converter as recited in claim 4, wherein the voltage applying means of the nonlinear polymer includes a metal electrode that is vacuum-evaporated to the nonlinear polymeric waveguide.

Claims 9-18 (Canceled).